



Caltrans Division of Research,
Innovation and System Information

Research



Results



Research Support

SEPTEMBER 2017

Project Title:

Application of a Project
Prioritization Framework to the
2016 SHOPP

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Application of a Project Prioritization Framework to the 2016 SHOPP

Caltrans applied a Multi-Objective Decision Analysis (MODA) framework to prioritize projects within the State Highway Operation and Protection Program (SHOPP).

WHAT WAS THE NEED?

This effort was carried out in support of the need to perform an analysis and prioritization of a portfolio of 384 newly proposed projects for the 2016 State Highway Operation and Protection Program (SHOPP), having a multi-year funding of approximately \$4.6 billion. The project prioritization approach used in this analysis built upon a methodology developed for the 2014 SHOPP which demonstrated the application and benefits of a Multi-Objective Decision Analysis (MODA) framework to aid decision-makers in identifying a project portfolio delivering the greatest value to stakeholders. The approach was shown to bring transparency to the project prioritization process, providing a quantitative basis for decision making and a mechanism to communicate the alignment of project priorities with strategic objectives. Furthermore, in contrast to past prioritization processes, the new approach breaks down funding "silos" by ranking projects based on objective, data-derived value and direct consideration of the project's cost.

A number of changes were made in the 2016 SHOPP analysis, based on experience from prior analyses. Although still evolving, the calculation framework for the 2016 SHOPP incorporates more relevant transportation data and considers a broader range of factors in determining project value. A spreadsheet-based tool, initially developed for the 2014 SHOPP, was updated to include these improvements. New and revised report products have been added to more effectively present prioritization outcomes.



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WHAT WAS OUR GOAL?

The goal of this work was to apply a more objective and transparent methodology for the prioritization of the 2016 SHOPP projects based on best practices and decision-making sciences.

WHAT DID WE DO?

A Multi-Objective Decision Analysis (MODA) framework was implemented to prioritize projects within the State Highway Operation and Protection Program (SHOPP). To arrive at a final prioritization, several major activities were carried out. This included the compilation of project-specific and regional transportation data, a geo-spatial analysis to associate regional data to specific projects, the calculation of project scores, and the weighting and ranking of projects.

WHAT WAS THE OUTCOME?

The work tested the validity of a prototype project prioritization framework. Several key shortcomings and limitations were identified. Recommendations for further research and development were also identified.

WHAT IS THE BENEFIT?

A MODA-based approach brings transparency to the project prioritization process, provides a quantitative basis for decision-making, and provides a mechanism to communicate the alignment of project priorities with strategic objectives.

LEARN MORE

http://www.dot.ca.gov/tam/documents/SHOPP_Pilot_Project_Final_Report_6-17-15.pdf

IMAGES

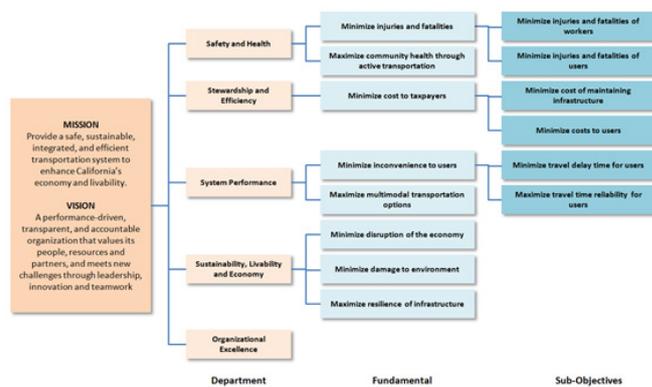


Image 1: Objectives Hierarchy

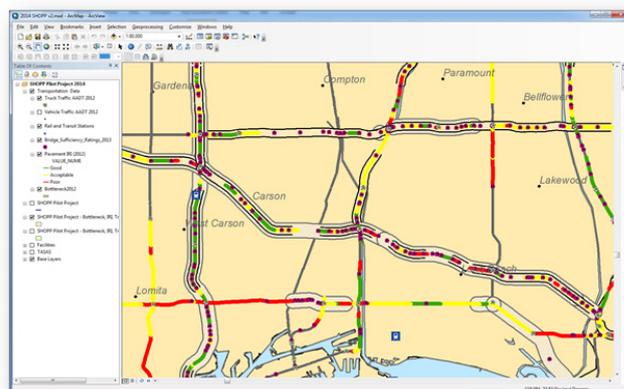


Image 2: Geo-Spatial Analysis of SHOPP Projects Implemented with Caltrans GIS Data

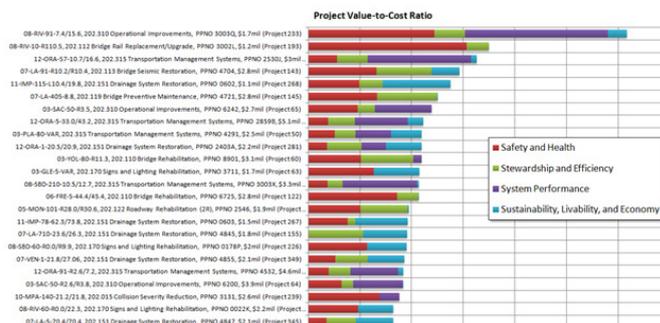


Image 3: Prioritization Outcomes

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